

## **REMARKS/ARGUMENTS**

Reconsideration of the application as amended is respectfully requested.

### **Status of Claims**

Claims 1, 3 and 4 are pending in the application, with claim 1 being the only independent claim. Claims 1 and 3 have been amended, with the subject matter of claim 2 being incorporated into claim 1. Claims 2 and 5-13 have been canceled, without prejudice or disclaimer.

### **Overview of the Office Action**

Claims 1 and 2 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,787,989 (*Wada*) in view of U.S. Patent No. 6,188,176 (*Nakaya*).

Claims 3 and 4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Wada* and *Nakaya*, and further in view of U.S. Patent No. 6,553,788 (*Ikeda*).

### **Summary of Subject Matter Disclosed in the Specification**

The following descriptive details are based on the specification. They are provided only for the convenience of the Examiner as part of the discussion presented herein, and are not intended to argue limitations which are unclaimed.

The specification discloses a method of manufacturing a transparent substrate 1 that is to have a transparent conductive film 3 formed on a surface thereof. This method includes controlling a surface smoothness of the surface of the transparent substrate 1 to satisfy the condition  $0 \text{ nm} \leq R_z \leq 4 \text{ nm}$ , and controlling a surface smoothness of a surface of the transparent conductive film 3 to satisfy the condition  $0 \text{ nm} \leq R_z \leq 8 \text{ nm}$ , where  $R_z$  is the 10-point mean

roughness (see par. [0045] of the specification). The controlling of the surface smoothness is carried out by omitting polishing of the surface of the transparent substrate 1. *See* Fig. 1 and paragraphs [0008], [0009], [0020], [0038] and [0042] to [0049] of the specification.

As illustrated in Fig. 1, the transparent substrate 1 and the transparent conductive film 3 can be used to form an organic electroluminescent (EL) device 10, with the transparent conductive film 3 serving as an anode and a thin metallic film layer 7 serving as a cathode. If a direct current voltage is applied between the transparent conductive film 3 and the thin metallic film layer 7, then holes from the transparent conductive film 3 reach a light-emitting layer 6 via a hole transport layer 5, and electrons from the thin metallic film layer 7 reach the light-emitting layer 6, and these holes and electrons recombine in the light-emitting layer 6, whereby light is emitted, mostly in the direction of the arrow A in FIG. 1. *See* Fig. 1 and paragraph [0044] of the specification.

However, if there are marked surface undulations on the film-formed substrate 4 that acts as the anode, i.e. surface height differences are large, then an electric field may be concentrated at the projecting parts, and hence small electrical discharges may occur, and thus the organic EL device 10 may fail, or non-luminescent spots may arise, i.e. the durability of the organic EL device 10 will be markedly reduced. Consequently, to maintain a good light emission state and improve durability, the surface of the film-formed substrate 4 is required to have surface height differences that are as small as possible.

It has been found that when a surface smoothness of the surface of the transparent substrate 1 is controlled to satisfy  $0 \text{ nm} \leq R_z \leq 4 \text{ nm}$  and a surface smoothness of a surface of the transparent conductive film 3 is controlled to satisfy  $0 \text{ nm} \leq R_z \leq 8 \text{ nm}$ , no non-luminescent spots are found on the organic EL device 10. *See* Tables 1 and 2 of the specification. Thus, this

method improves durability of such organic EL devices, increases manufacturing yield, and reduces manufacturing costs. *See* paragraphs [0006], [0007] and [0038] of the specification.

### **Allowability of the Claims**

#### **Independent Claim 1**

Independent claim 1 has been amended to include the subject matter of now canceled claim 2. Amended claim 1 now recites, *inter alia*, the following:

“wherein the controlling of the surface smoothness is carried out by omitting polishing of the surface of the transparent substrate” (emphasis added).

Applicants respectfully submit that amended claim 1 is patentable over *Wada* in view of *Nakaya* because the combination of *Wada* and *Nakaya* fails to teach or suggest the above-quoted limitations of amended claim 1.

On page 3 of the Office Action. The Examiner acknowledges that *Wada* is silent about the smoothness of the substrate. Thus, it logically follows that *Wada* fails to teach or suggest the limitation “the controlling of the surface smoothness is carried out by omitting polishing of the surface of the transparent substrate” of claim 2 (now claim 1).

To bridge this “gap” between claim 2 and *Wada*, the Examiner refers to *Nakaya* and contends that *Nakaya* is silent about any substrate polishing step.

Applicants respectfully disagree.

*Nakaya* relates to an organic EL device which includes a substrate 21, a hole injecting electrode 22, an electron injecting electrode 25, and organic layers 23, 24 disposed between the electrodes 22, 25 (*see* the Abstract and Fig. 1 of *Nakaya*). *Nakaya* explicitly teaches that “[f]or adjusting the surface roughness of glass substrates to the above-defined range, the substrate surface may be mirror polished using diamond grits or cerium oxide” (emphasis added) (*see* col.

4, lines 24-26 of *Nakaya*). In other words, *Nakaya* explicitly teaches controlling the surface smoothness by polishing the substrate surface. *Nakaya* thus actually teaches away from controlling the surface smoothness by omitting polishing of the substrate surface. Therefore, contrary to the Examiner's interpretation, *Nakaya* fails to teach or suggest the limitations "the controlling of the surface smoothness is carried out by omitting polishing of the surface of the transparent substrate" of claim 2 (now amended claim 1). As a result, *Nakaya* fails to supply what is missing from *Wada*. *Ikeda* also fails to bridge the gap between amended claim 1 and *Wada*.

In view of the foregoing, especially *Nakaya*'s teaching away from the present claimed invention, withdrawal of the 35 U.S.C. 103(a) rejection of claim 2 (now claim 1) is respectfully requested.

#### Dependent Claims 3 and 4

Claims 3 and 4 depend, either directly or indirectly, from claim 1 and, thus, each is allowable therewith.

Moreover, these claims include features which serve to even more clearly distinguish the present invention over the prior art of record.

#### Conclusion

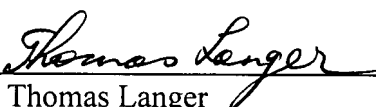
Based on all of the above, it is respectfully submitted that the present application is now in proper condition for allowance. Prompt and favorable action to this effect and early passing of this application to issue are respectfully solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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Dated: July 5, 2007